TRANE®

Installation

Conversion to Trane TR200 from ATV58 or ATV66

Commercial Self Contained

Models: Only Macon-built units with factory-installed VFDs. This includes the following Signature Series™ and Modular Commercial Self Contained Units built prior to Trane TR200 VFD drive units:

S**C 20 through 35 ton (Modular Series)

S**D 20 through 80 ton (Signature Series)

S**F 20 through 110 ton (Signature Series)

S**G 20 through 35 ton (Modular Series)

August 2009 **PART-SVN117A-EN**

Warnings, Cautions and Notices

Warnings, Cautions and Notices. Note that warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provide to alert installing contractors to potential hazards that could result in personal injury or death. Cautions are designed to alert personnel to hazardous situations that could result in personal injury, while notices indicate a situation that could result in equipment or property-damage-only accidents.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

ATTENTION: Warnings, Cautions and Notices appear at appropriate sections throughout this literature. Read these carefully.

⚠ **WARNING**: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE: Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns!

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

Responsible Refrigerant Practices!

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING
Contains Refrigerant!

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

⚠ WARNING
Hazard of Explosion and Deadly Gases!

Never solder, braze or weld on refrigerant lines or any unit components that are above atmospheric pressure or where refrigerant may be present. Always remove refrigerant by following the guidelines established by the EPA Federal Clean Air Act or other state or local codes as appropriate. After refrigerant removal, use dry nitrogen to bring system back to atmospheric pressure before opening system for repairs. Mixtures of refrigerants and air under pressure may become combustible in the presence of an ignition source leading to an explosion. Excessive heat from soldering, brazing or welding with refrigerant vapors present can form highly toxic gases and extremely corrosive acids. Failure to follow all proper safe refrigerant handling practices could result in death or serious injury.

⚠ WARNING
Personal Protective Equipment (PPE) Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards.

- **Before installing/servicing this unit, technicians MUST put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. ALWAYS refer to appropriate MSDS sheets and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations.**
- **If there is a risk of arc or flash, technicians MUST put on all necessary Personal Protective Equipment (PPE) in accordance with NFPA70E for arc/flash protection PRIOR to servicing the unit.**

Failure to follow recommendations could result in death or serious injury.

Introduction

Trademarks

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Table of Contents

General Information

About This Manual

The instructions outlined in this manual describe the procedures required to successfully retrofit an ATV66 or ATV58 VFD on 20- through 110-ton Commercial Self Contained units to a Trane TR200 drive. For help selecting the proper parts for this work, refer to general service bulletin PART-SVB22A-EN or the most current version.

The installation instructions in this manual are divided into three general topic areas:

- Removal of existing AFD (ATV66 or ATV58) and components
- Installation of VFD (TR200) and components
- TR200 Programming

The sections described are specific to unit mounted drives as found in the S**D and S**F Signature Series™ units. However, some of the information will apply to remote mounted drives found in the S**C and S**G Modular Series units.

Table 1. Model types where this bulletin should be used

Unit Type		S**C	S**D	S**F	S**G
Commercial	Water-cooled	SCWC	SCWD	SCWF	SCWG
	Remote condenser	SCRC	SCRD	SCRF	SCRG
Industrial	Water-cooled	SIWC	SIWD	SIWF	SIWG
	Remote condenser	SIRC	SIRD	SIRF	SIRG

Installation

Remove Existing VFD and Components

⚠ WARNING
Hazardous Voltage w/Capacitors!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

Disconnect all power and control wiring to the existing VFD and unbolt the VFD from the unit mounting rails. Remove existing keypad from the unit control panel door if remotely mounted from the VFD.

Remove and discard any existing baffles that cover ventilating louvers in the control panel door.

Figure 1. Remove existing louver baffles

⚠ WARNING
Heavy Objects!

The maximum drive weight could be 230+ pounds. Make sure all lifting components and methods used are capable of supporting the weight of the drive. Failure to properly lift unit could result in death or serious injury.

Install kit parts as shown in Figure 2, p. 8. The drive mounting plate should be centered on the existing rails and attached first. The drive is then mounted to the mounting plate. Notice that the

"barriers" (item #6) in the kits replace the "baffles" removed previously and increase cooling air to the new VFD. The barriers are required for electrical separation of circuits to enhance safety.

There are two different kits of parts used to install the new TR200 drives.

- KIT15434 for the smaller units having a configuration of 208 Vac sizes 7.5, 10, 15, and 20 horsepower or 460 Vac sizes 7.5, 10, 15, 20, 25, 30 and 40 horsepower
- KIT15435 for the larger size units with a configuration of 208 Vac sizes 25, 30, and 40 horsepower or 460 Vac sizes 50 and 60 horsepower.

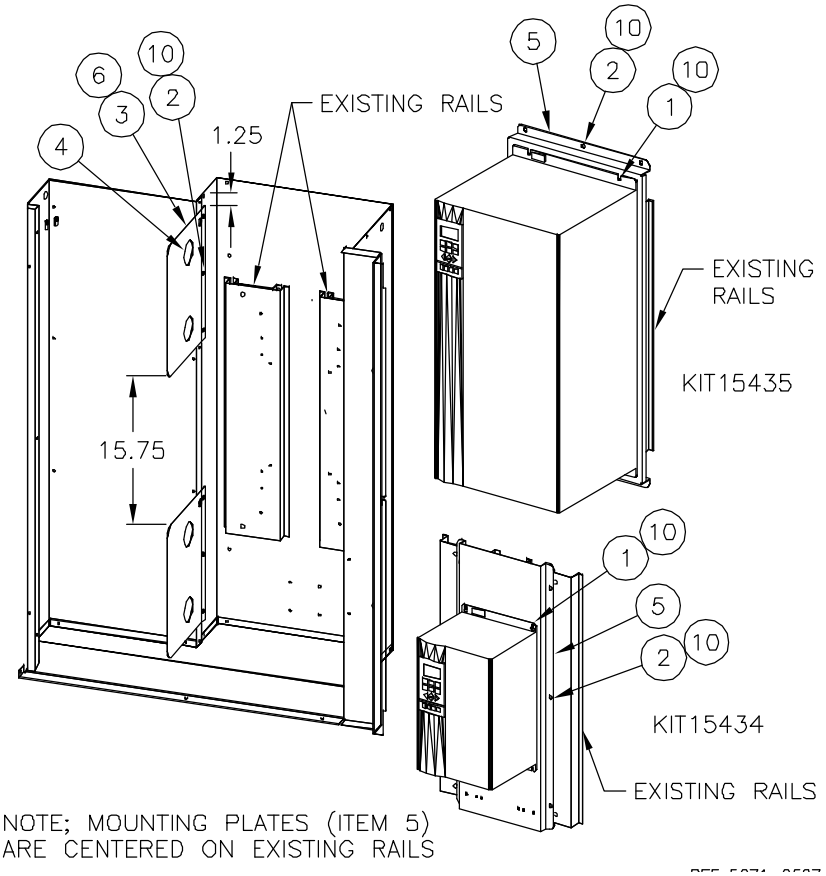
Table 2. KIT15434 Small kit components, ref. 5071-0599

Item	Part Number	Qty	Description
1	X25010020000	6	Screw; #10-32 X 0.75 hex machine
	X25120047020	4	Screw; 0.31-18 X 0.75 hex machine
2	X25330034520	12	Screw; 0.31-18 X 0.75 thread rolling
3	X20030175040	1	Grommet edge extrusion
4	X19100029450	4	Bushing; 2" ID
5	507106530100	1	Mounting bracket
6	506892880100	2	Barriers
7	507106320100	1	Cover plate
8	X25020237010	4	Screw; #8-32 X 0.5
9	X28060232020	4	Locknut; #8-32
10	X22080028090	6	Lockwasher; #10
	X22080028120	16	Lockwasher; 0.31
11	PART-SVN117A-EN	1	Installation literature

Table 3. KIT15435 Large kit components, ref. 5071-0599

Item	Part Number	Qty	Description
1	X25120047020	4	Screw; 0.31-18 X 0.75 hex machine
2	X25330034520	12	Screw; 0.31-18 X 0.75 thread rolling
3	X20030175040	1	Grommet edge extrusion
4	X19100029450	4	Bushing; 2" ID
5	507106540100	1	Mounting bracket
6	506892880100	2	Barriers
7	507106320100	1	Cover plate
8	X25020237010	4	Screw; #8-32 X 0.5
9	X28060232020	4	Locknut; #8-32
10	X22080028120	16	Lockwasher; 0.31
11	PART-SVN117A-EN	1	Installation literature

Figure 2. Barrier locations inside control panel, ref. 5071-0597

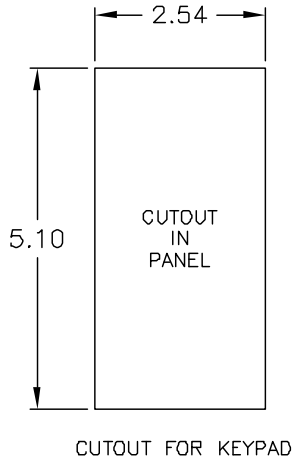


Note: *Drive not included with mounting kits.*

Remote Keypad Mounting

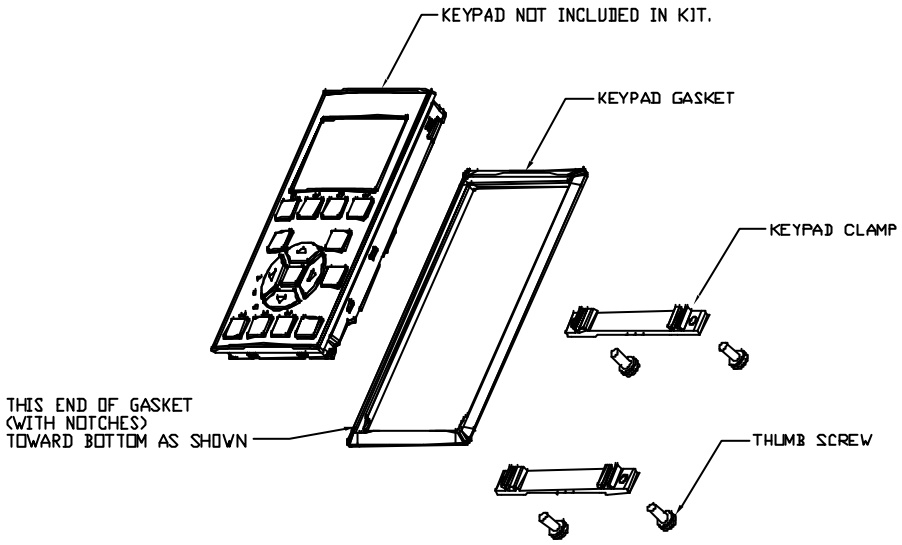
Some units will require the remote keypad opening in the control panel to be enlarged:

Figure 3. Cut out detail, ref. 5097-0598



Other units have too large an opening for the new keypad and will require use of the cover plate (items #7, 8, and 9) defined in the mounting kits.

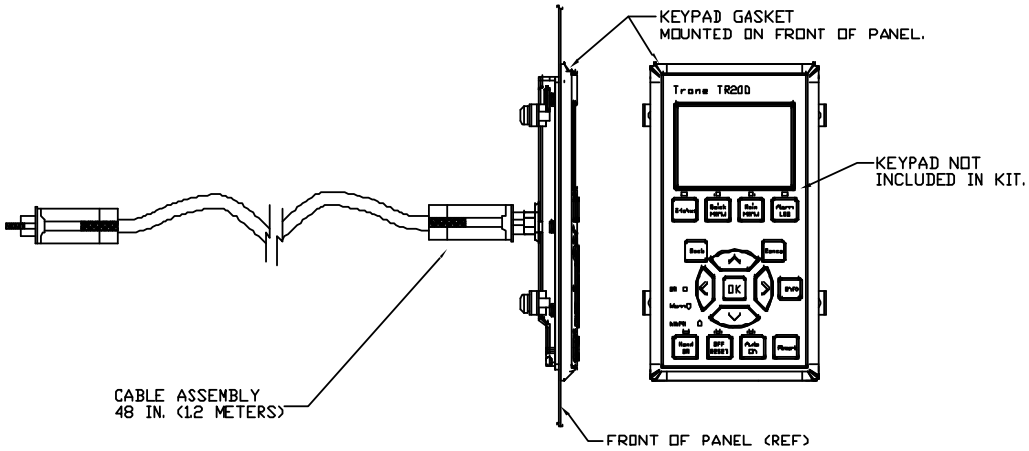
Figure 4. Keypad assembly order, ref. 5071-0600



Note: *The keypad ships with the TR200 drive. It is NOT included with the keypad mounting kit, KIT15436.*

1. Remove the keypad control from the VFD.
2. Mount the gasket on the keypad control.
3. Mount the keypad control in the panel hole. Place the keypad clamp on the keypad unit and fasten it with the four screws. Torque the control unit mounting screws to maximum 0.7 ounce-inches (0.5 Ncm).
4. Connect the supplied cable between the VFD and the keypad control.

Figure 5. Keypad assembly complete, with cable, ref. 5071-0601



Power Wiring

⚠ WARNING
Ground Wire!

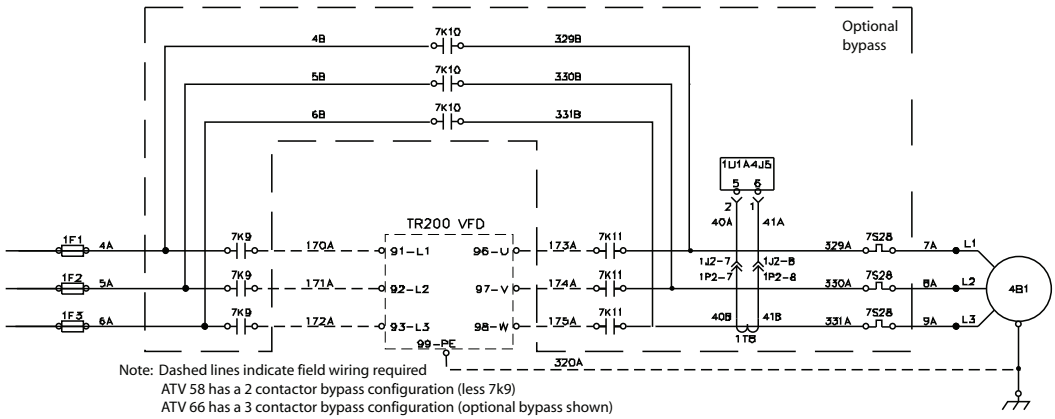
All field-installed wiring must be completed by qualified personnel. All field-installed wiring must comply with NEC and applicable local codes. Failure to follow this instruction could result in death or serious injuries.

NOTICE
Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

The existing unit and drive power wiring varies slightly from one unit design to the next. Figure 6 is provided as a typical power wiring application. The TR200 section of the diagram is the area where customer connections will change. Use the original unit wiring diagram and the new drive ship with diagram to find the exact connection points.

Figure 6. Power wiring example, with optional bypass shown



The following table provides power wiring guidance when wiring in the new drive. The connection data shown is from the original unit drive.

Table 4. Power wire markings

Unit Model	Unit Control	Existing Drive	With Bypass Contactor?	Wire Number on Existing High Voltage Drive Terminal						
				L1	L2	L3	U	V	W	GND
S**D	UCM	ATV66	No	4A	5A	6A	7A	8A	9A	320A
S**D	UCM	ATV66	Yes	170A	171A	172A	173A	174A	175A	320A
S**F	IPAK	ATV66	No	351C	352C	353C	288C	289C	290C	320B
S**F	IPAK	ATV66	Yes	327A	328A	329A	330A	331A	332A	320A
S**F	IPAK	ATV58	No	351C	352C	353C	288C	289C	290C	320B
S**F	IPAK	ATV58	Yes	324C	325C	326C	330A	331A	332A	320A
S**C	UCM	ATV66	No	4B	5B	6B	7B	8B	9B	GND
S**C	UCM	ATV66	Yes	4B	5B	6B	7B	8B	9B	320A
S**G	IPAK	ATV66	No	351B	352B	353B	288B	289B	290B	GND
S**G	IPAK	ATV66	Yes	4Z	5Z	6Z	288B	289B	290B	GND
S**G	IPAK	ATV58	No	351B	352B	353B	288B	289B	290B	GND
S**G	IPAK	ATV58	Yes	4Z	5Z	6Z	288B	289B	290B	GND

Power Wire Size Changes for TR200

⚠ WARNING
Ground Wire!

All field-installed wiring must be completed by qualified personnel. All field-installed wiring must comply with NEC and applicable local codes. Failure to follow this instruction could result in death or serious injuries.

NOTICE
Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

The VFD input power wires may require changing for some applications. Some TR200 replacement VFDs have larger line input current ratings than existing ATV58 and ATV66 installations. The existing unit wiring should be checked to ensure it is sized correctly for the VFD Line Input Current.

Control Wiring

⚠ WARNING
Ground Wire!

All field-installed wiring must be completed by qualified personnel. All field-installed wiring must comply with NEC and applicable local codes. Failure to follow this instruction could result in death or serious injuries.

NOTICE
Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

Refer to the following typical wiring diagrams. Note that wiring is based on unit model number, type of control system, the existing drive type and if there is drive bypass circuitry.

Specific wiring schematics can be found in the figures that follow. Browse through the figure captions to identify the one that best represents the options installed on the unit you are working on. Select figures based on the unit model, unit controller, existing drive type, and whether or not the unit has bypass.

Note: *Dashed lines in the following schematics indicate wiring connections that need to be made by a technician.*

Figure 7. SC or S**D UCM ATV66 and S**F or S**G IPAK ATV66 or ATV58, no bypass**

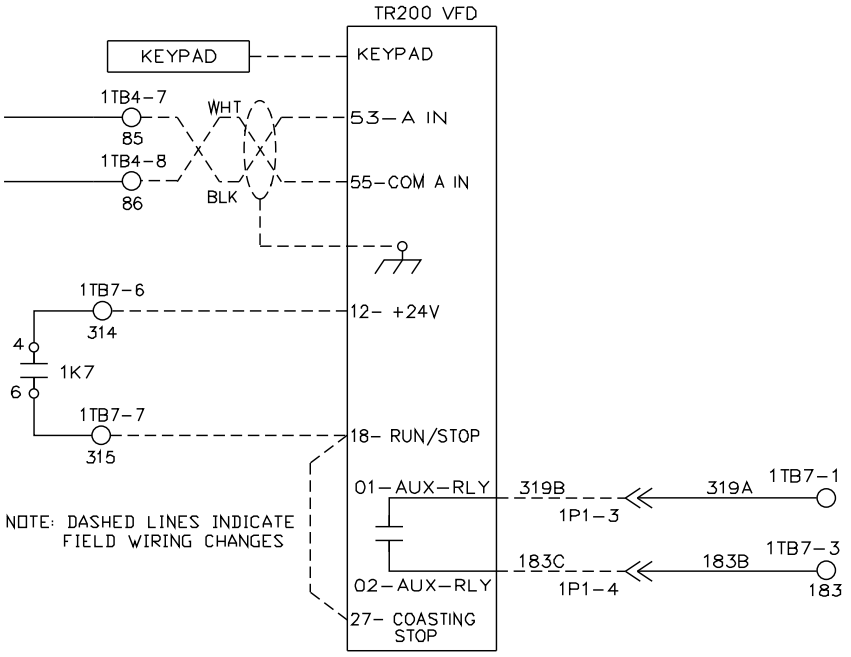


Figure 8. SD, UCM, ATV66, with bypass**

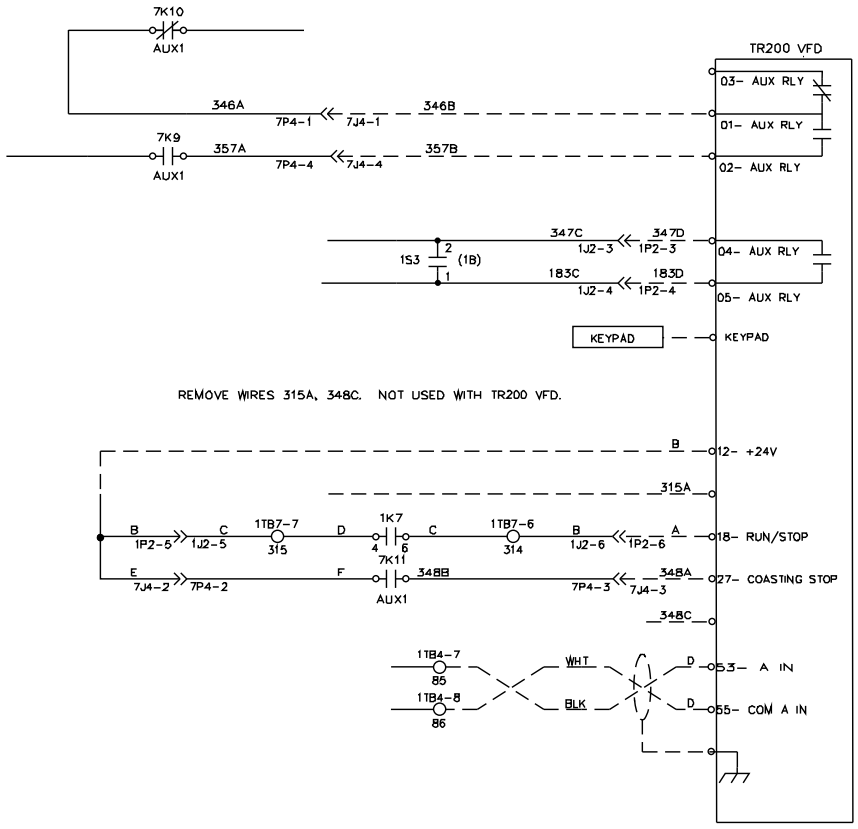


Figure 9. SF, IPAK, ATV66, with bypass**

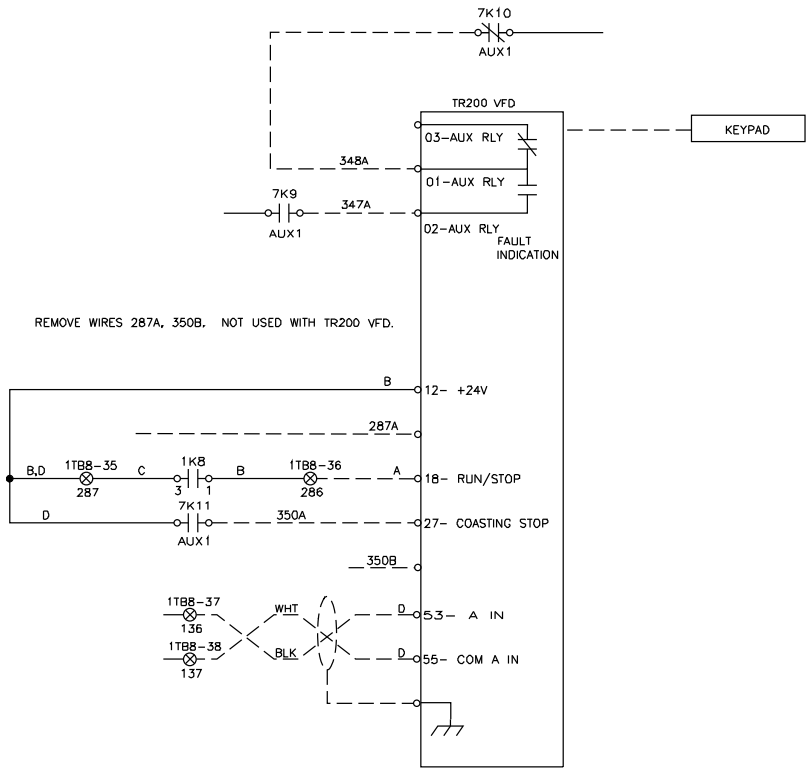


Figure 10. SF, IPAK, ATV58, with bypass**

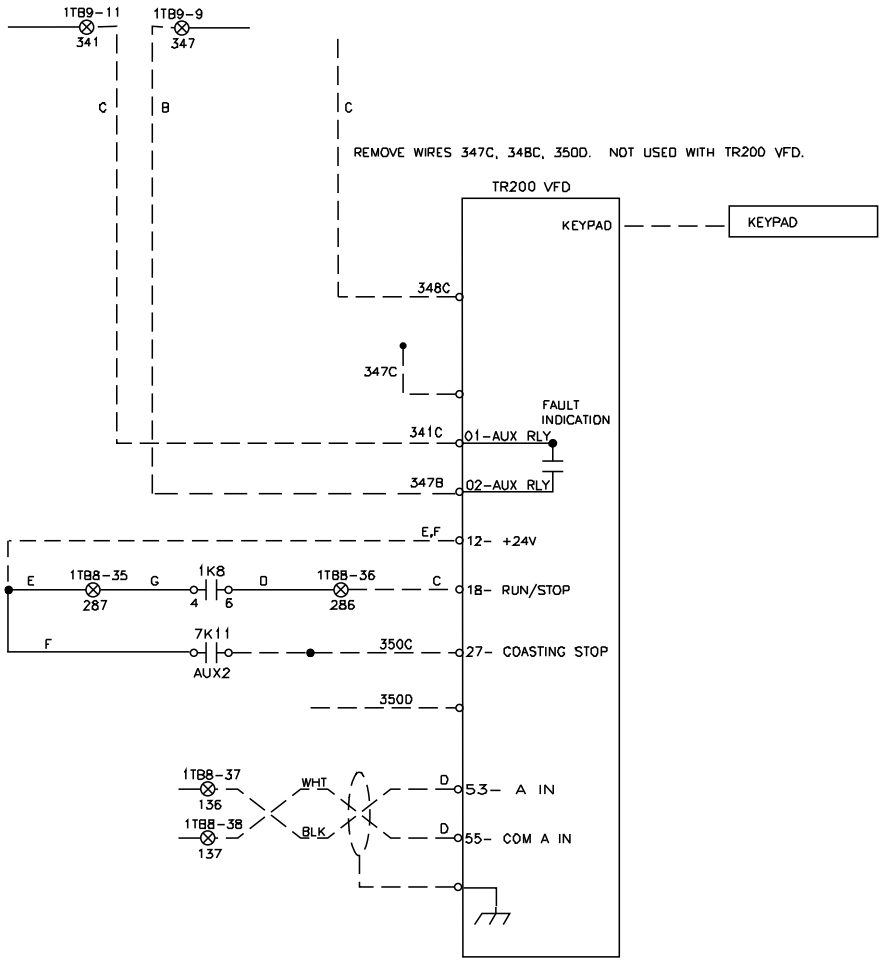


Figure 11. SG, IPAK, ATV66 or ATV58, with bypass**

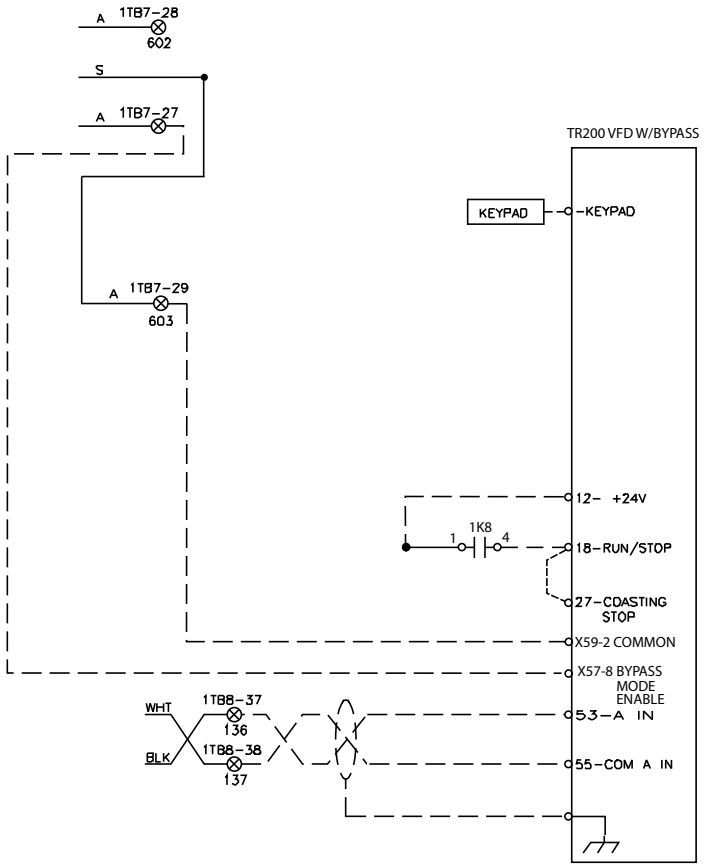
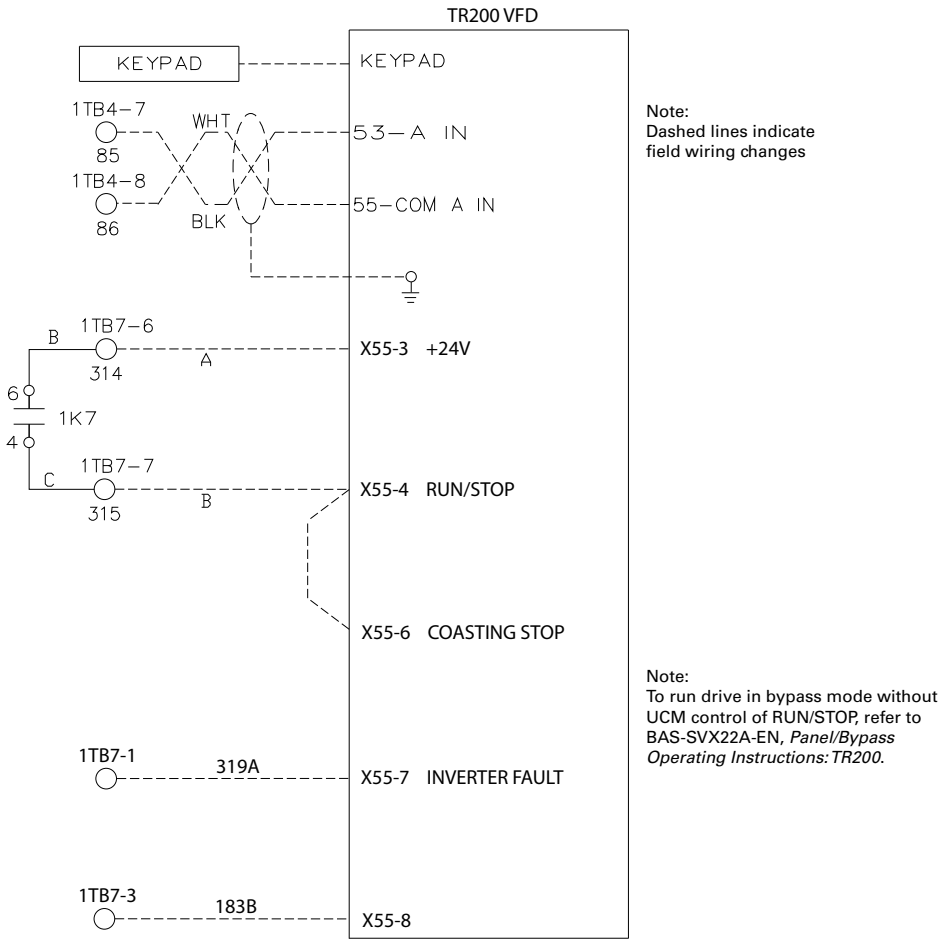


Figure 12. SC, UCM, ATV66**



TR200 VFD Programming Information

Please refer to BAS-SVX19A-EN (*Operating Instructions: TR200*), or the most recent version, for complete programming information.

www.trane.com

For more information, contact your local Trane office or e-mail us at comfort@trane.com

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